**FIG 1**

Unit Conversion Calculator

General Info

Length Conversion

27 m to 88.5827 ft

Area Conversion

35 ft<sup>2</sup> to 3.25161 m<sup>2</sup>

Volume Conversion

15 galUS to 56.7812 L

Weight Conversion

1 kg to 2.20462 lbm

Pressure Conversion

70.3 kg/cm<sup>2</sup> to 1000 psi

Temperature Conversion

72.5 degF to 22.5 degC

Density Conversion

8.346 lbm/galUS to 1000.07 kg/m<sup>3</sup>

Velocity Conversion

45 ft/s to 13.716 m/s

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Coiled Tubing & Pipe Data

Volume


Fracturing

Cementing

Acid Oil Brine

FIG 2 Results from Unit Conversion Calculator


Unit Conversion Calculator

Flow Rate Conversion 

102 62

galUS/min

to m3/min

Power Conversion 

104 64

106 66

hp

to W

108 68

28

Fig 2A

meter	3.281	feet
meter	39.3701	inches
meter	1.094	yards

$$1 \text{ m} = 3.281 \text{ ft}$$

$$\therefore 27 \text{ m} = 27 \times 3.281 \frac{\text{ft}}{\text{m}} = 88.5827 \text{ ft}$$

FIG 3 Conversion Factors

110

26a

112a

112b

112c

112d

112e

114a

114b

114c

114d

110

112

112f

112g

112h

112i

112j

114

114e

114f

120c

120d

120b

Single Acting Triplex Pump

General Info

Pump Parameters

Efficiency: 95.00 %

Stroke Length: 12.000 in

Liner ID: 6.5000 in

Displacement/Liner: 0.039 bbl

Displacement/Stroke: 0.117 qb

Pump Calculator

rpm

time

vol

# strokes

Pump Rate: 60.00 strokes/min

Time: 1.00 min

Volume: 2.019 bbl

# Strokes: 60

Clear

Calculate

Each stroke displaces 3 liner volumes.

Strokes: 00002

Volume: 0.269 bbl

Time: 0.04 min

Coiled Tubing & Pipe Data

Volume

Fracturing

Cementing

Acid Off Brine

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FIG 4 Computing volumes for Single Acting Triplex Pumps

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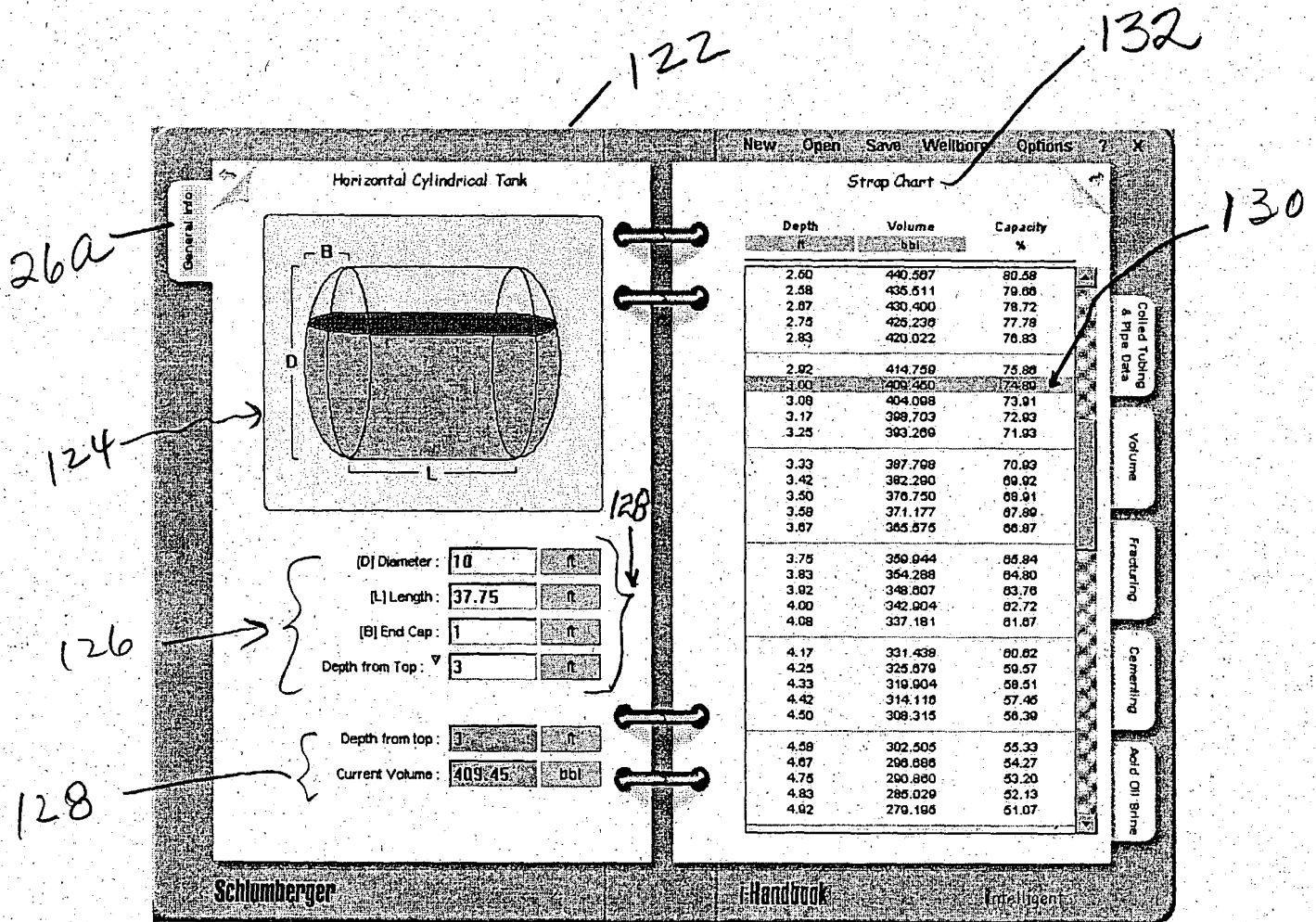


FIG 5 Computing Tank volumes and generating tank straps

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26a

26b

**Physical Properties of Casings based on Vendor Supplied Data**

Delmine S.p.A

Antares OD: 7 - 24.5

Joint Type: Coupled  
For more details contact the vendors directly.

OD	Weight	ID	Grade	Wall Thickness
In	lbm/ft	In		In
7.000	20.00	6.460	J-55	0.272
7.000	20.00	6.460	K-55	0.272
7.000	20.00	6.460	L-80	0.272

**Physical Properties of Casings based on Vendor Supplied Data**

**Pipe Body - Calculated Data †**

Internal Yield	Collapse Resistance	Tensile Yield	Joint Strength	Regular Coupling
psi	psi	lbm	lbm	in
3740	2270	318195	373190	7.857
3740	2270	318195	460502	7.857
5440	2738	459910	507679	7.857

**Search Vendor Supplied Casings**

OD: 7.000 In Weight: 20.00 lbm/ft Grade: J-55 Find

Supplier	Brand	OD	Weight	Grade
		In	lbm/ft	
Delmine S.p.A	Antares	7.000	20.00	J-55
Delmine S.p.A	Antares MS	7.000	20.00	J-55
Delmine S.p.A	Antares MS20	7.000	20.00	J-55
Grant-Endeco	Atlas-Bradford	7.000	20.00	J-55
Hydri	Series 500 Type 524	7.000	20.00	J-55
Kawasaki-HDS	FOXIN	7.000	20.00	J-55
VAM Group	VAM PRO	7.000	20.00	J-55

Please note that when using OD and/or weight, the search engine will return the casings with the closest match to the entered values. E.g. entering OD of 177.7 mm returns 177.799 mm ODs.

Done

136

140

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FIG 6 Displaying Tubular Data based on supplier and ability to search through the database.

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140a

140

140b

26a

26b

### Tubular Stretch Calculator

Tubular Type: Drill Pipe

OD	Weight	ID	Length	Stretch
in	lbm/ft	in	ft	Oilfield
5.000	16.25	4.408	10000	0.09144
			0	
			0	
			0	
			10000	

Oilfield = in x 1000 lbm x 1000 ft & Metric = cm/km

Pull: 30000 lbm

Young's Mod. for Steel: 3e+007 psi

Effective Stretch: 27.4 in

### Free Point Calculator

Tubular Type: Drill Pipe

OD: 5.000 in

Weight: 16.25 lbm/ft

ID: 4.408 in

Total Stretch: 27.434 in

Pull: 30000 lbm

Young's Modulus for Steel: 3e+007 psi

Free Point Constant: 10935.7

Free Point is Located at: 10000.3 ft

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FIG 7 Calculation of Tubular stretch and free point.

New Open Save Wellbore Options 7 X

General Info

Coiled Tubing & Pipe Data

Volume

Dimensions and Capacities of Tubing

OD		Weight	ID	Capacity	Displacement	
in		lbm/ft	in	bbt/ft	Open	Plugged
					bbt/ft	bbt/ft
1.050	NU	1.14	0.824	0.00086	0.00041	0.00107
1.050	U	1.20	0.824	0.00086	0.00041	0.00107
1.050	U	1.54	0.742	0.00053	0.00053	0.00107
1.315	NU	1.70	1.049	0.00106	0.00061	0.00188
1.315	I	1.72	1.049	0.00106	0.00061	0.00188
1.315	U	1.80	1.049	0.00106	0.00061	0.00188
1.315	U	2.24	0.957	0.00089	0.00079	0.00188
1.660	I	2.10	1.410	0.00193	0.00074	0.00287
1.660	NU	2.30	1.380	0.00185	0.00082	0.00287
1.660	I	2.33	1.380	0.00185	0.00082	0.00287
1.660	U	2.40	1.380	0.00185	0.00082	0.00287
1.660	U	3.07	1.278	0.00158	0.00109	0.00287
1.900	I	2.40	1.650	0.00264	0.00086	0.00350
1.900	NU	2.75	1.610	0.00251	0.00098	0.00350
1.900	I	2.76	1.610	0.00251	0.00098	0.00350
1.900	U	2.90	1.610	0.00251	0.00098	0.00350
1.900	U	3.73	1.500	0.00218	0.00132	0.00350
1.900	NU	4.42	1.400	0.00190	0.00160	0.00350
1.900	NU	5.15	1.300	0.00164	0.00186	0.00350
2.063	I	3.25	1.751	0.00297	0.00115	0.00413
2.063	NU	4.50	1.613	0.00252	0.00180	0.00413
2.375	NU	4.00	2.041	0.00404	0.00143	0.00547
2.375	NU	4.80	1.995	0.00386	0.00161	0.00547
2.375	U	4.70	1.995	0.00386	0.00161	0.00547
2.375	NU	5.80	1.867	0.00338	0.00209	0.00547

NU = non-Upset, U = Upset, I = Integral

Dimensions and Capacities of Tubing

OD		Weight	ID	Capacity	Displacement	
in		lbm/ft	in	bbt/ft	Open	Plugged
					bbt/ft	bbt/ft
2.375	U	5.95	1.867	0.00338	0.00209	0.00547
2.375	NU	6.80	1.785	0.00309	0.00238	0.00547
2.375	NU	7.35	1.703	0.00281	0.00286	0.00547
2.375	U	7.46	1.703	0.00281	0.00286	0.00547
2.875	NU	6.40	2.441	0.00578	0.00224	0.00802
2.875	U	6.50	2.441	0.00578	0.00224	0.00802
2.875	NU	7.80	2.323	0.00524	0.00278	0.00802
2.875	U	7.90	2.323	0.00524	0.00278	0.00802
2.875	NU	8.60	2.259	0.00465	0.00307	0.00802
2.875	U	8.70	2.259	0.00465	0.00307	0.00802
2.875	NU	9.35	2.195	0.00468	0.00334	0.00802
2.875	U	9.46	2.195	0.00468	0.00334	0.00802
2.875	NU	10.50	2.061	0.00424	0.00378	0.00802
2.875	NU	11.50	1.995	0.00386	0.00416	0.00802
3.500	NU	7.70	3.068	0.00914	0.00275	0.01190
3.500	NU	9.20	2.992	0.00869	0.00320	0.01190
3.500	U	9.30	2.992	0.00869	0.00320	0.01190
3.500	NU	10.20	2.922	0.00829	0.00360	0.01190
3.500	NU	12.70	2.750	0.00734	0.00465	0.01190
3.500	U	12.95	2.750	0.00734	0.00465	0.01190
3.500	NU	14.30	2.640	0.00677	0.00513	0.01190
3.500	NU	15.50	2.548	0.00630	0.00559	0.01190
3.500	NU	17.00	2.440	0.00578	0.00611	0.01190
4.000	NU	9.50	3.548	0.01222	0.00331	0.01554
4.000	U	11.00	3.478	0.01173	0.00380	0.01554

Fracturing

Cementing

Acid Oil Brine

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FIG 8 Tubular Capacities and Displacement Volumes



182a      182      182b

**Annular Volume Calculator**

**Cross Section**

**Outer** (Casing) 184

OD: 4.500 in

Weight: 9.50 lbm/ft

ID: 4.090 in

**Inner** (Tubing) 184a

OD: 1.050 in

Weight: 1.14 lbm/ft

ID: 0.824 in

**Calculated Results**

**Volume for Unit Length**

Annular: 0.015179 bbl/ft

Tubular: 0.000659 bbl/ft

**Metal Displacement of Outer**

Open: 0.003421 bbl/ft

Plugged: 0.019671 bbl/ft

**Metal Displacement of Inner**

Open: 0.000411 bbl/ft

Plugged: 0.001071 bbl/ft

**Volume for Given Depth**

Depth: 1000 ft

Annular: 15.1791 bbl

Tubular: 0.659575 bbl

**Depth for Given Volume**

Volume: 5 bbl

Annular: 329.4 ft

Tubular: 7580.63 ft

194 192 190  
196 191  
198 197

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FIG 9 Annulus Volume Calculations

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26a General Info

26b Coiled Tubing & Pipe Data

26c Volume

26d Fracturing

**Slurry Density Tables**

Proppant is added to the base gel while carrying out the majority of hydraulic fracturing jobs or during placement of sand plugs. With the addition of proppant, the fluid is termed as a slurry and its physical properties like density, yield, etc. largely depend on the specific gravity of the base gel and the proppant itself.

PPA denotes the concentration of proppant in the slurry in Oilfield units. It depicts the amount of proppant in pounds, added to one gallon of clean fluid.

kgPA denotes the concentration of proppant in the slurry in Metric units. It stands for amount of proppant in kilograms added to one cubic meter of clean fluid.

Clean Fluid Ratio (CFR) denotes the fraction of clean fluid in a unit volume of slurry. Slurry Yield is the reciprocal of CFR and denotes the factor by which the slurry volume increases when proppant is added to clean fluid.

Proppant Specific Gravity:

Select Proppant Type:

Name	Mesh Size	Grain Dia. in	S.G.
20/40 CarboLite®	20/40	0.028	2.73
16/20 CarboLite®	16/20	0.037	2.73
20/40 NapLite®	20/40	0.028	2.80
16/20 NapLite®	16/20	0.037	2.80
12/18 NapLite®	12/18	0.053	2.80
12/18 CarboLite®	12/18	0.051	2.73

Density of Base Fluid:  lbm/galUS

**Slurry Density Tables**

Prop Conc Clean	CFR	Prop Conc Slurry	Density of Slurry lbm/galUS	Hydrostatic Gradient ps/ft
0.00	1.00	0.00	8.33	0.433
0.50	0.98	0.49	8.63	0.448
1.00	0.96	0.96	8.92	0.463
1.50	0.94	1.40	9.19	0.478
2.00	0.92	1.83	9.46	0.491
2.50	0.90	2.24	9.71	0.504
3.00	0.88	2.64	9.95	0.517
3.50	0.86	3.01	10.18	0.529
4.00	0.84	3.38	10.41	0.541
4.50	0.83	3.73	10.62	0.552
5.00	0.81	4.08	10.83	0.563
5.50	0.80	4.39	11.03	0.573
6.00	0.78	4.70	11.22	0.583
6.50	0.77	5.00	11.41	0.593
7.00	0.76	5.29	11.59	0.602
7.50	0.74	5.57	11.76	0.611
8.00	0.73	5.84	11.93	0.619
8.50	0.72	6.10	12.09	0.628
9.00	0.71	6.38	12.24	0.636
9.50	0.70	6.60	12.39	0.644
10.00	0.68	6.84	12.54	0.651
10.50	0.67	7.07	12.68	0.659
11.00	0.66	7.29	12.82	0.666
11.50	0.65	7.51	12.95	0.673
12.00	0.64	7.72	13.08	0.680
12.50	0.63	7.93	13.21	0.686
13.00	0.62	8.12	13.33	0.692
13.50	0.62	8.32	13.45	0.699

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FIG 10 Slurry Density Calculations

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26a

26b

26c

26d

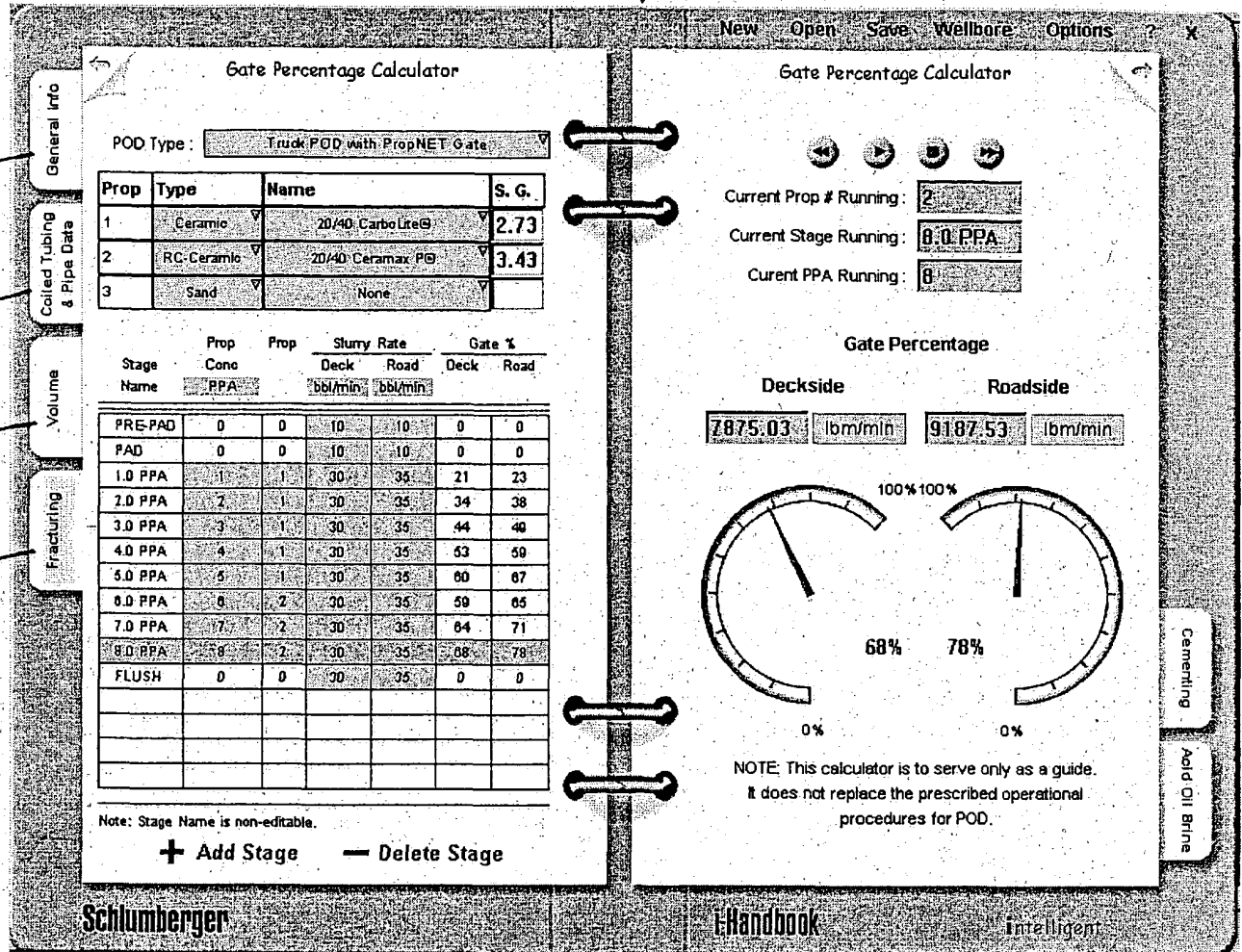


FIG 11 Generating Gate% Charts for a given pump schedule

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26a — General Info

26b — Coiled Tubing & Pipe Data

26c — Volume

26d — Fracturing

### Screen Out Calculations

Proppant Type: Sand

Proppant: 20/40 Jordan-Unimin

Specific Gravity: 2.65

Wellbore Volume to Perfs: 144.5 bbl

Surface Line Volume: 5 bbl

Displacement To Perfs: 149.5 bbl

Proppant Designed for Job: 45000 lbm

Volume Flushed [1]: 55 bbl

Surface Prop Counter: 40000 lbm

[1] Flush volume should include surface line volume.  
Entered value should be less than displacement to perfs.

Proppant Schedule Type:

☒ Step

☐ RAMPFRAC

Proppant Conc	Slurry Volume
PPA	bbl
4	29.5
6	55
8	10
Total:	94.5

### Results

Slurry in Well: 94.5 bbl

Prop in Well: 17559.8 lbm

Prop in Surface Line: 0 lbm

Prop Placed: 22440.2 lbm

% Placed: 49.9

Prop Remaining [2]: 5000 lbm

[2] Proppant remaining on surface; this excludes the amount left in the Surface Line.

### Expected Top of Proppant while tagging [3]

☒ Use Tubular I.D. 4.000 in

☐ Use Tubular Capacity 0.015542 bbl/ft

Wellbore Volume Flushed: 50 bbl

Expected Top Of Proppant: 3216.92 ft

[3] Calculation assumes that apart from the volume successfully flushed, the remainder of the well is filled up with proppant.

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FIG 12 Screen out calculations

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26a

26b

26c

26d

26e

**Cement Slurry Calculations**

System Name: **Lead**

Required Slurry Volume: **936.512** ft<sup>3</sup>

Required Slurry Density: **14.5** lbm/galUS

Water Density: **8.32003** lbm/galUS

Surface Temperature: **68** degF

Custom Blend Name: **New**

**Step I: Select Calc Mode & Construct Blend**

☐ Mass %      Sack Property:

☒ Abs Vol %      **Mass** **84** lbm

☐ Mass/Sk

Code	Function	Abs Vol Effective %	Density lbm/ft <sup>3</sup>
G	Neat Cement	85.0	150.76
D035	Extender	35.0	154.82
None			
None			
None			
None			
None			

Custom Cement & Additives

**Step II: Select Dry Blend** **New**

Dry Blend	Density lbm/ft <sup>3</sup>	Sk Wt lbm	Abs Vol galUS	Mass Cement
Custom Blend	184.04	84	3.414	100.0%

**Step III: Select Cement Additives**

Code	Function	Conc	Unit	Design	Density lbm/ft <sup>3</sup>
D146A	Dispersant	0.046	galUS/sk	Vol/Sk	77.41
D081	Retarder	0.200	galUS/sk	Vol/Sk	78.85
D300	Fluid Loss	0.800	galUS/sk	Vol/Sk	82.42
D075	Extender	0.500	galUS/sk	Vol/Sk	86.15
D047	Antifoam	0.050	galUS/sk	Vol/Sk	82.17
D044	Accelerator	4.000	%	%BWOW	134.84
None					
None					
None					
None					

W = Wet, D = Dry

**Results: Cement Slurry Properties**

Slurry Yield: **1.27165** ft<sup>3</sup>/sk

Base Fluid: **4.45007** galUS/sk

Mix Water: **4.50287** galUS/sk

Mix Fluid: **6.09707** galUS/sk

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FIG 13 Cement Slurry Calculations showing the property of blended cement

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New Open Save Wellbore Options ? X

General Info  
 Coiled Tubing & Pipe Data  
 Volume  
 Fracturing  
 Cementing

### Cement Slurry Calculations

**Results: Blend Totals**

Code	Material Name	Qty/Sk		Total Quantity	
		lbm	galUS	lbm	galUS
G	Neat Cement	59.2	2.219	43647	-
D035	Extender	24.7	1.194	18214	-
Totals:		84.0	3.414	61862	0.00

**Results: Additive Totals**

Code	Material Name	Qty/Sk		Total Quantity	
		lbm	galUS	lbm	galUS
D145A	Dispersant	0.46	0.04	342	33.14
D081	Retarder	2.10	0.20	1548	147.29
D300	Fluid Loss	6.67	0.80	4917	589.16
D075	Extender	5.75	0.50	4241	368.23
D047	Antifoam	0.41	0.05	306	36.82
D044	Accelerator	1.48		1090	

### Cement Slurry Calculations

**Results: Water Needed** 3316.15 galUS

**Results: Bulk Volumes**

Dry Blend Only: 1.00 ft<sup>3</sup>/sk

Dry Blend + Solid Additives: 1.02 ft<sup>3</sup>/sk

**Administrative Details**

Location: Schlumberger - Sugar Land, TX

Job Date:  

Customer

Name:  

Number:  

Well Name:  

Quote Number:  

Job Type: Liner

System Description:

465 sks G + 166 sks D035 + 0.045 galUS/sk D145A + 0.200 galUS/sk D081 + 0.800 galUS/sk D300 + 0.500 galUS/sk D075 + 0.050 galUS/sk D047 + 4.000 % D044

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FIG 14 Bulk Plant loading guide is generated based on the user inputs

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26a — General Info

26b — Coiled Tubing & Pipe Data

26c — Volume

26d — Fracturing

26e — Cementing

### Casing Lift Calculations

Tubular Type:

OD:  in

Weight:  lbm/ft

ID:  in

Tubular Setting Depth (MD):  ft

Tubular Setting Depth (TVD):  ft

Annulus:

Fluid Depths at the End of Job

Fluid Type	Top TVD ft	Bottom TVD ft	Density lbm/galUS	Hydrostatic Pressure psi
Drilling Mud	0	1000	12.5	850.0
Spacer	1000	1200	12.5	130.0
Lead	1200	2400	13.0	811.2
Tail	2400	3500	10.4	938.0
None				
None				
None				

Tubular:

Displacing Fluid Density:  lbm/galUS

### Static Conditions

Tubular Weight in Air:  lbm

Weight of Fluid in Tubular:  lbm

Total Downward Force:  lbm

Well Hydrostatic Force:  lbm

Static Lifting Force:  lbm

**Tubular will not be lifted by hydrostatics alone.**

### While Pumping

Pressure to Land Plug:  psi

Additional Force:  lbm

Total Force:  lbm

**Tubular will not be lifted while pumping.**

Critical Surface Pressure:  psi

Note: Any surface pressure that is greater than the critical surface pressure calculated above, will lift the tubular. Friction pressures are not included in the calculation.

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Acid Oil Brine

FIG 15 Casing Lift calculations



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26a — General Info

26b — Coiled Tubing & Pipe Data

26c — Volume

26d — Fracturing

26e — Cementing

26f — Acid Oil Brine

### HCl Density Calculator & Table

HCl Concentration: **28** %

Specific Gravity: **1.14018**

Density: **9.49773** lbm/galUS

% HCl	Specific Gravity	Degrees Baume	Density lbm/galUS	Hydrostatic Gradient psi/ft
17	1.0847	11.3	9.036	0.4699
18	1.0898	11.9	9.078	0.4720
19	1.0948	12.6	9.120	0.4742
20	1.0998	13.2	9.162	0.4764
21	1.1049	13.8	9.204	0.4786
22	1.1099	14.4	9.246	0.4808
23	1.1150	14.9	9.288	0.4830
24	1.1200	15.5	9.330	0.4851
25	1.1250	16.1	9.372	0.4873
26	1.1301	16.7	9.414	0.4895
27	1.1351	17.3	9.456	0.4917
28	1.1402	17.8	9.498	0.4939
29	1.1452	18.4	9.540	0.4961
30	1.1503	18.9	9.582	0.4983
31	1.1553	19.5	9.624	0.5004
32	1.1604	20.0	9.666	0.5026
33	1.1654	20.6	9.708	0.5048
34	1.1705	21.1	9.750	0.5070
35	1.1756	21.7	9.792	0.5092
36	1.1806	22.2	9.835	0.5114
37	1.1857	22.7	9.877	0.5136
38	1.1907	23.2	9.919	0.5158

### HCl Dilution Calculator & Table

Initial Concentration: **36** %

Desired Concentration: **15** %

Desired Vol: **500** galUS

Initial Density: **9.83453** lbm/galUS

Final Density: **8.95203** lbm/galUS

Volume of Strong: **189.639** galUS

Volume of Water: **310.361** galUS

Volume 15%  
Desired

Percent Strong HCl - %	15	16	17	18	19
500	500.0	466.5	437.0	410.8	387.4
1000	1000.0	933.1	874.1	821.7	774.9
1500	1500.0	1399.7	1311.2	1232.6	1162.4
2000	2000.0	1866.2	1748.3	1643.5	1549.9
2500	2500.0	2332.8	2185.4	2054.4	1937.4
3000	3000.0	2799.4	2622.5	2465.3	2324.8
3500	3500.0	3265.9	3059.5	2876.2	2712.3
4000	4000.0	3732.5	3496.6	3287.1	3099.8
4500	4500.0	4199.1	3933.7	3698.0	3487.3
5000	5000.0	4665.8	4370.8	4108.9	3874.8
5500	5500.0	5132.2	4807.9	4519.8	4262.2
6000	6000.0	5598.8	5245.0	4930.7	4649.7
6500	6500.0	6065.3	5682.1	5341.8	5037.2

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FIG 16 Calculations showing density and dilution for Hydrochloric acid



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**Oil Gravity & API Calculator**

Specific Gravity =  $\frac{141.5}{dAPI + 131.5}$

$dAPI = \frac{141.5}{\text{Specific Gravity}} - 131.5$

Specific Gravity:

API Gravity:

**Oil Gravity & API Table**

API Gravity dAPI	Specific Gravity	Density lbm/gal US	Hydrostatic Gradient psi/ft
10	1.0000	8.337	0.4335
11	0.9930	8.278	0.4305
12	0.9861	8.221	0.4275
13	0.9792	8.164	0.4245
14	0.9725	8.108	0.4216
15	0.9659	8.052	0.4187
16	0.9593	7.998	0.4159
17	0.9529	7.944	0.4131
18	0.9465	7.891	0.4103
19	0.9402	7.838	0.4076
20	0.9340	7.787	0.4049
21	0.9279	7.736	0.4022
22	0.9218	7.685	0.3996
23	0.9159	7.635	0.3970
24	0.9100	7.586	0.3945
25	0.9042	7.538	0.3920
26	0.8984	7.490	0.3895
27	0.8927	7.443	0.3870
28	0.8871	7.396	0.3846
29	0.8816	7.350	0.3822
30	0.8762	7.304	0.3798
31	0.8708	7.260	0.3775
32	0.8654	7.215	0.3752
33	0.8602	7.171	0.3729
34	0.8550	7.128	0.3707
35	0.8498	7.085	0.3684
36	0.8448	7.043	0.3662
37	0.8398	7.001	0.3641
38	0.8348	6.960	0.3619

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FIG 17 Computing API gravity from Specific gravity of oil and vice versa

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26a — General Info  
26b — Coiled Tubing & Pipe Data  
26c — Volume  
26d — Fracturing  
26e — Cementing  
26f — Acid Oil Brine

### Physical Properties of Calcium Chloride Solutions

Sp. Gr. 60degF	Sol. Weight 60degF lbm/galUS	Materials per bbl Sol.		Freezing Point degF	Appx % CaCl2
		Peladown (94.97% CaCl2) lbm	Water galUS		
1.007	8.40	3	41.90	31.0	0.438
1.030	8.80	13	41.70	29.0	0.448
1.055	9.80	24	41.50	25.0	0.467
1.079	9.00	35	41.10	21.0	0.487
1.103	9.20	46	40.80	17.0	0.477
1.127	9.40	58	40.40	12.0	0.488
1.151	9.80	70	39.90	6.0	0.498
1.175	9.80	81	39.60	0.0	0.509
1.199	10.00	94	39.10	-8.0	0.519
1.223	10.20	106	38.60	-18.0	0.529
1.247	10.40	118	38.30	-29.0	0.540
1.271	10.80	130	37.80	-43.0	0.550
1.295	10.80	142	37.50	-59.0	0.561
1.319	11.00	154	36.60	-22.0	0.571
1.343	11.20	167	36.30	0.0	0.581
1.367	11.40	180	35.00	27.0	0.592
1.391	11.80	192	35.40	44.0	0.602
1.415	11.80	206	34.70	60.0	0.612
1.439	12.00	221	34.00	70.0	0.623

### Salt Requirement Calculator

Salt Type: **Calcium Chloride**

Calculation Mode:  
☒ Solution Density  
☐ Percent Concentration

Solution Density: **10.67** lbm/galUS

Percent Concentration: **28.7** %

Desired Solution Volume: **100** bbl

CaCl2 Type: **Peladown**

Calcium Chloride Req.: **13420** lbm

Water Required: **3769.5** galUS

Hydrostatic Gradient: **0.55385** psi/ft

Freezing Point: **-48.6** degF

Salt and water requirements for various concentrations or densities are obtained by interpolating between values provided in the preceding tables. Users are advised to perform adequate tests to ensure proper results.

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FIG 18 Salt interpolating table

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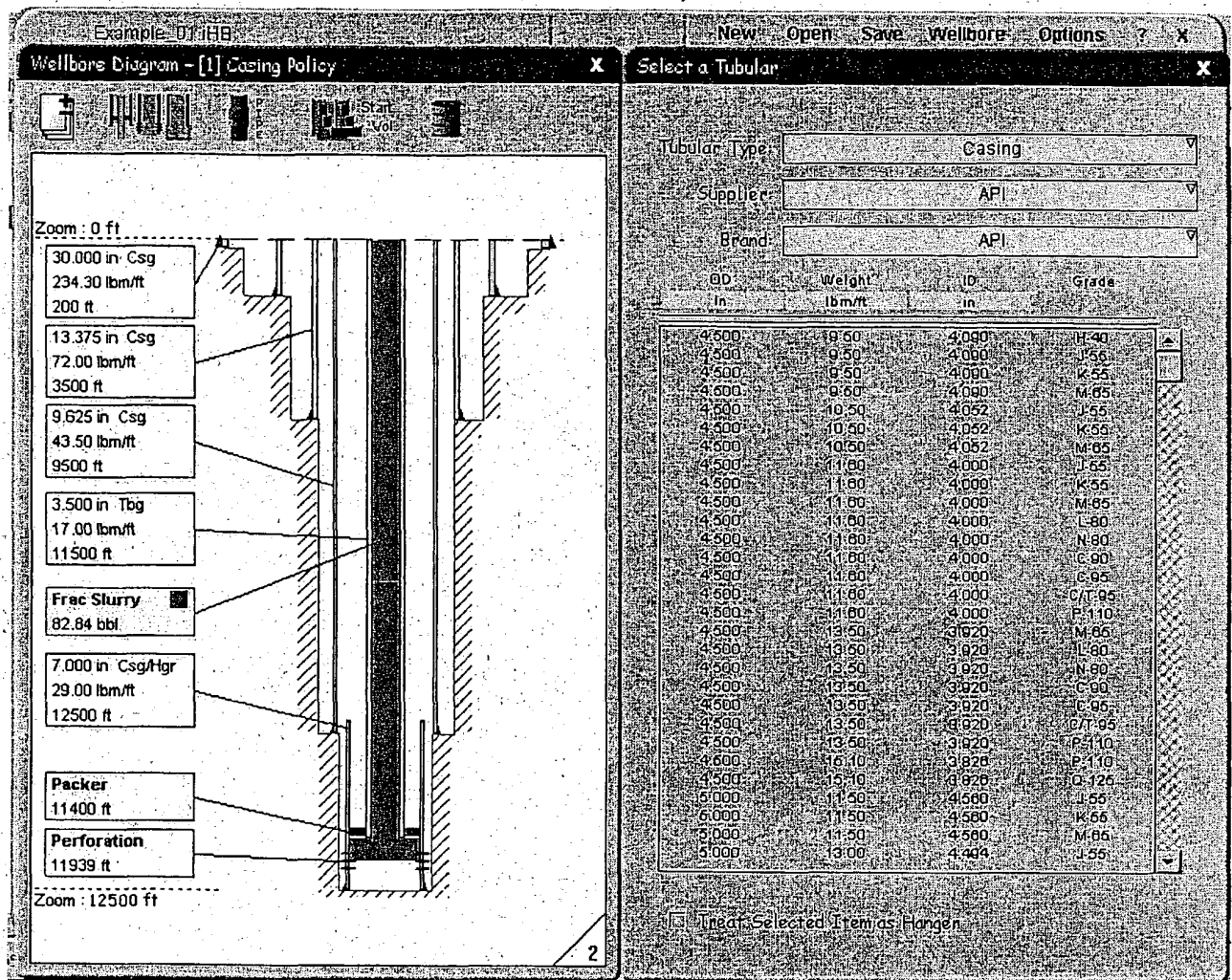
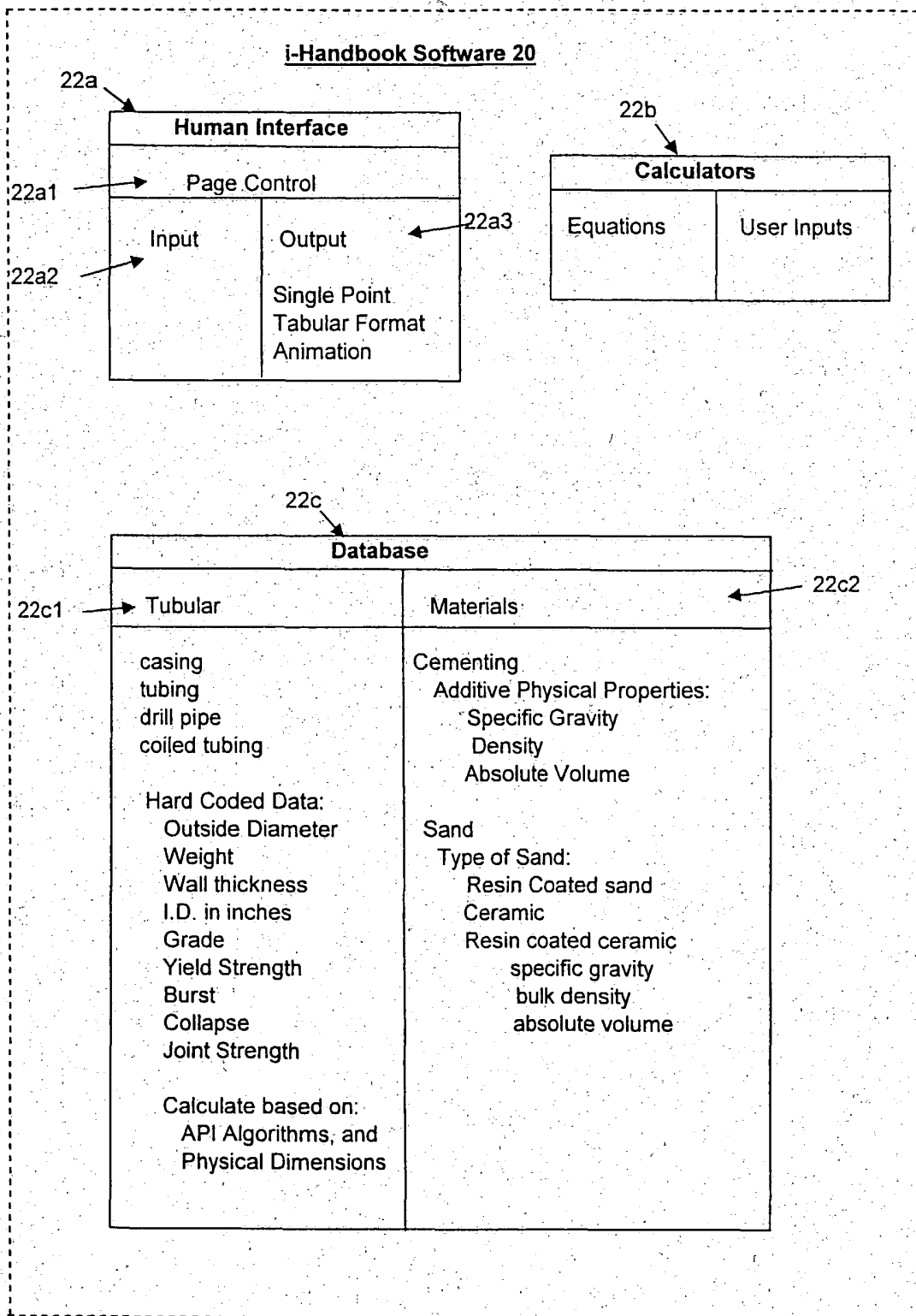
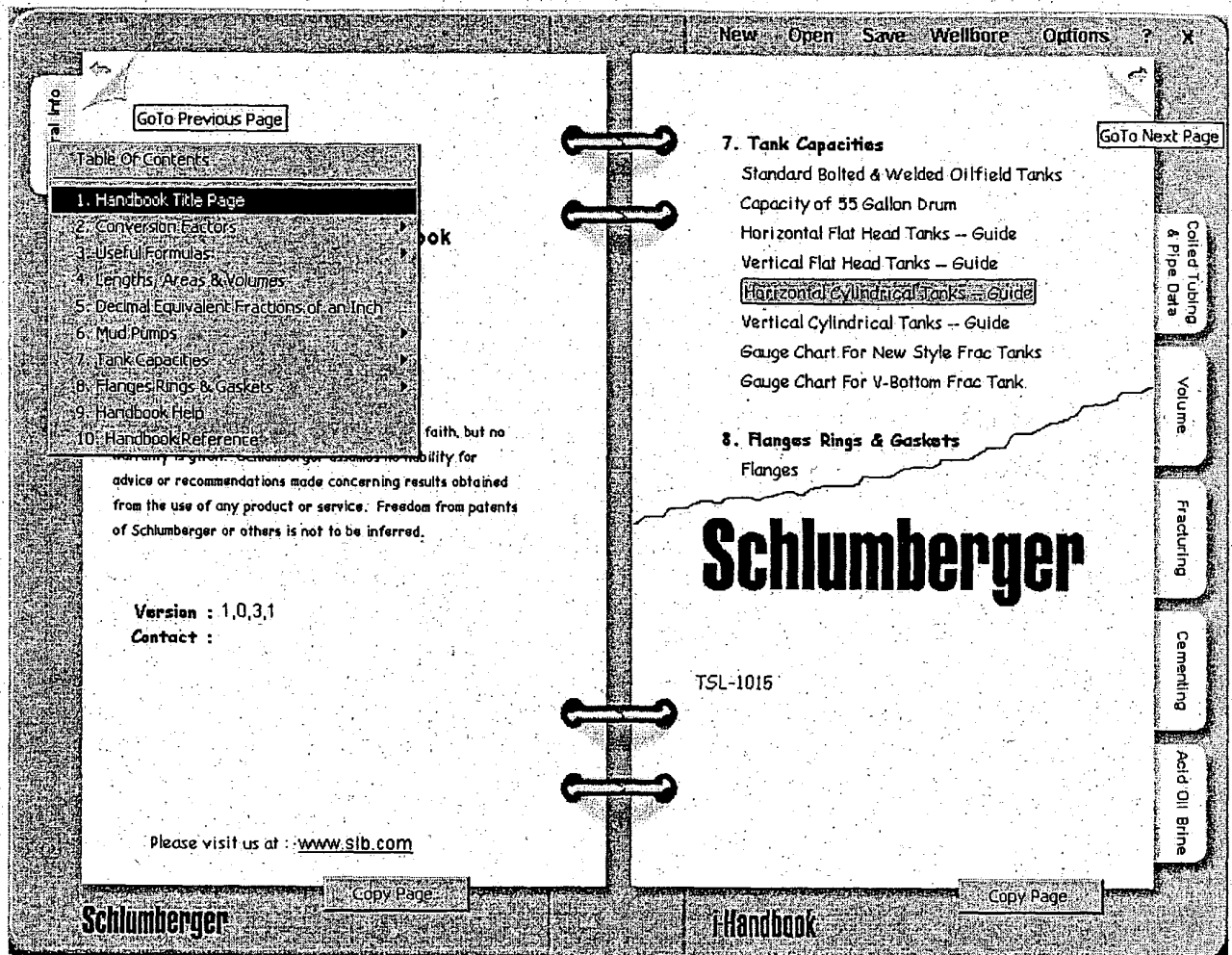
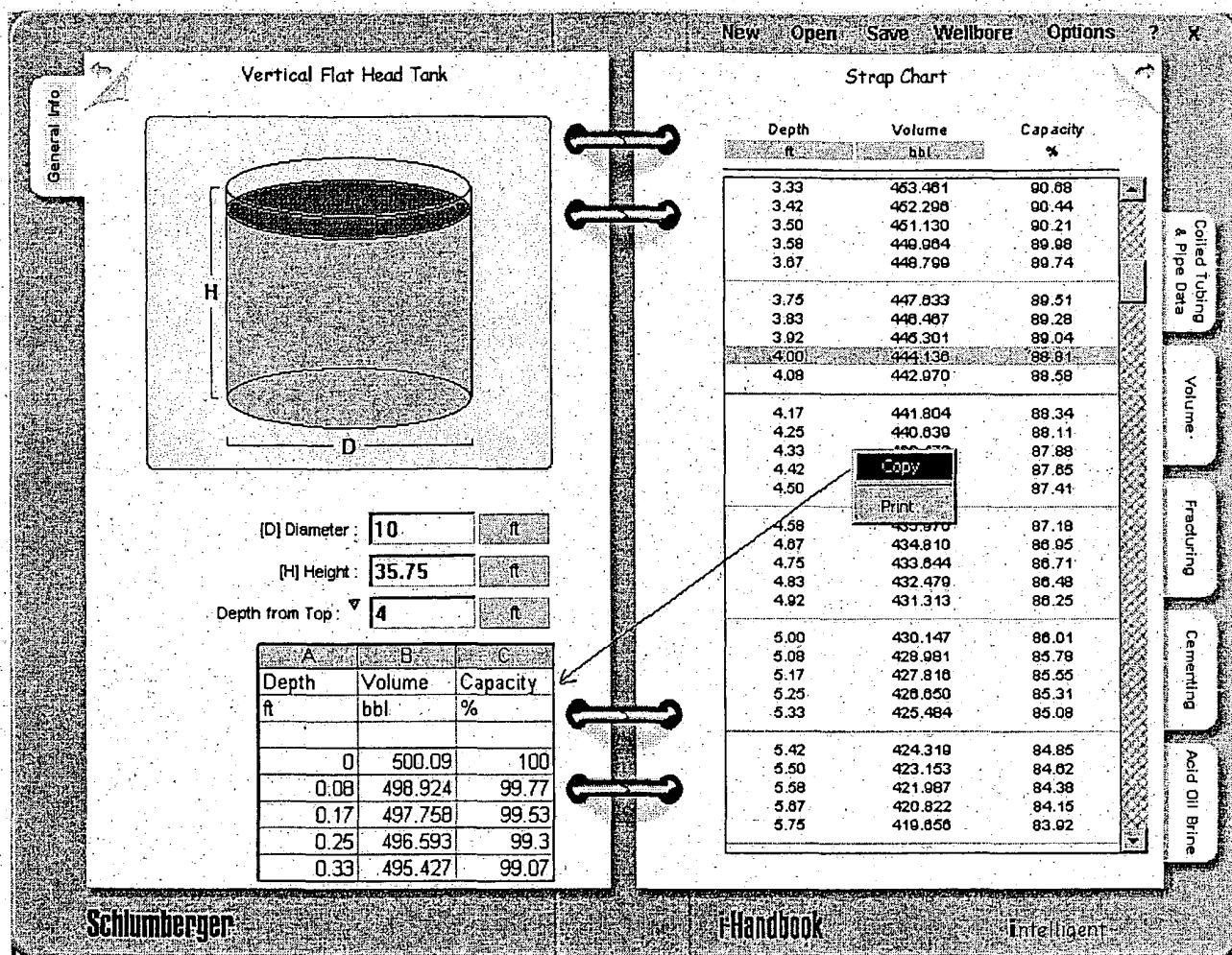


FIG 19 Wellbore Diagram feature

**FIG 20**



**FIG 21** Various features of i-Handbook that pertain to "page control" module.



**FIG 22** Table Control feature allows proper display of output results and also ability to copy the data and paste it in any cell-based software such that the value in individual cells remains editable.

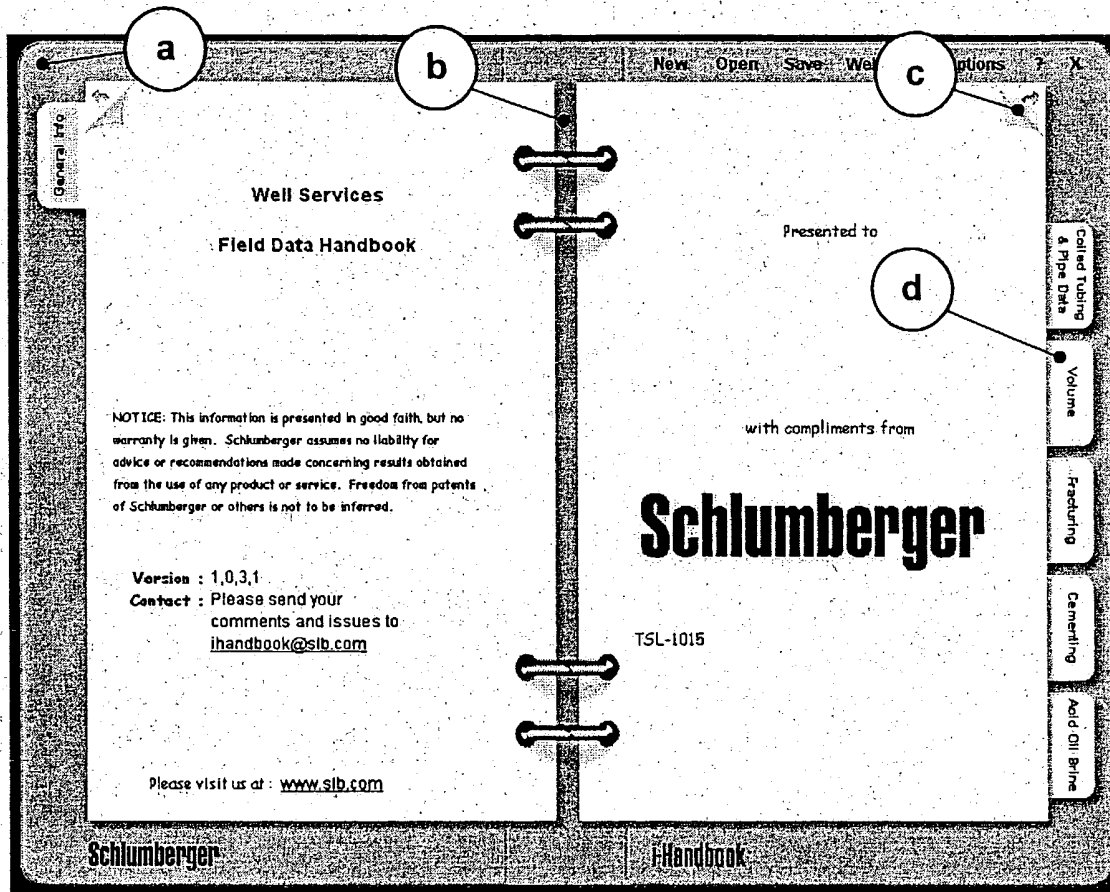


FIG 23 . i-Handbook Application on Windows Desktop.

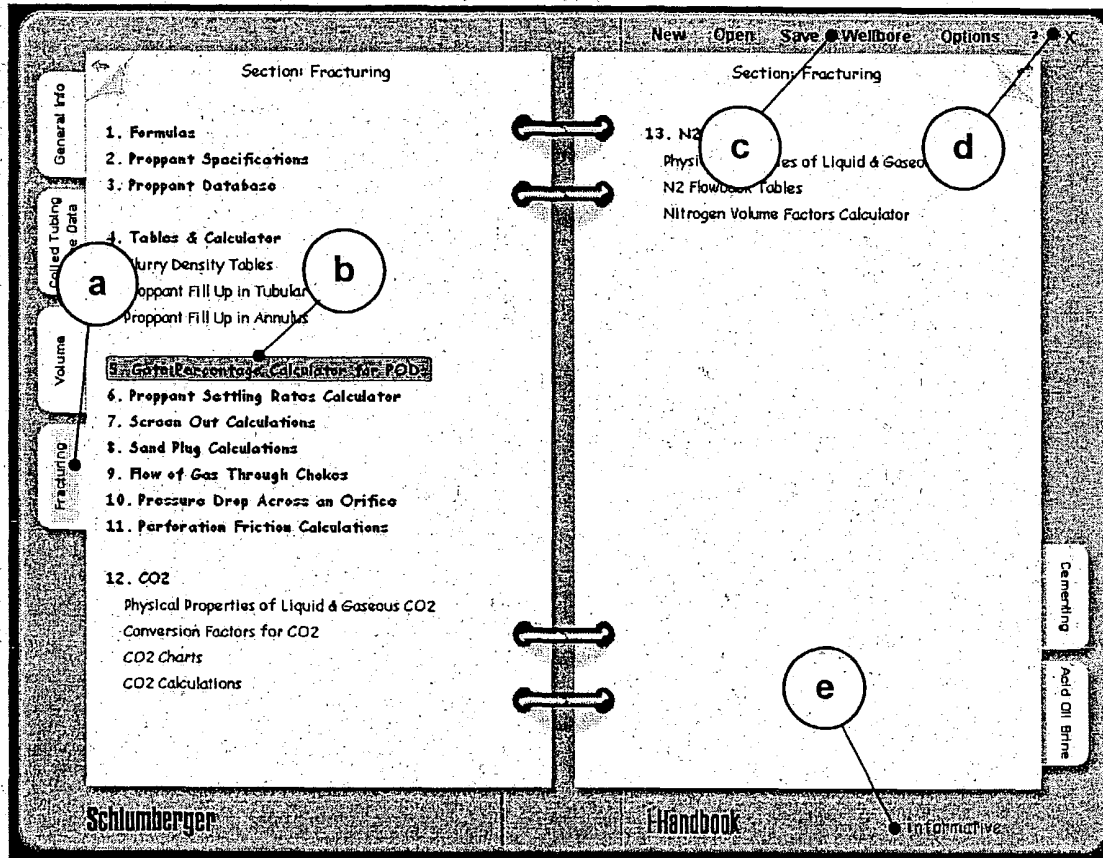


FIG 24 Extended functionality over physical Field Data Handbook



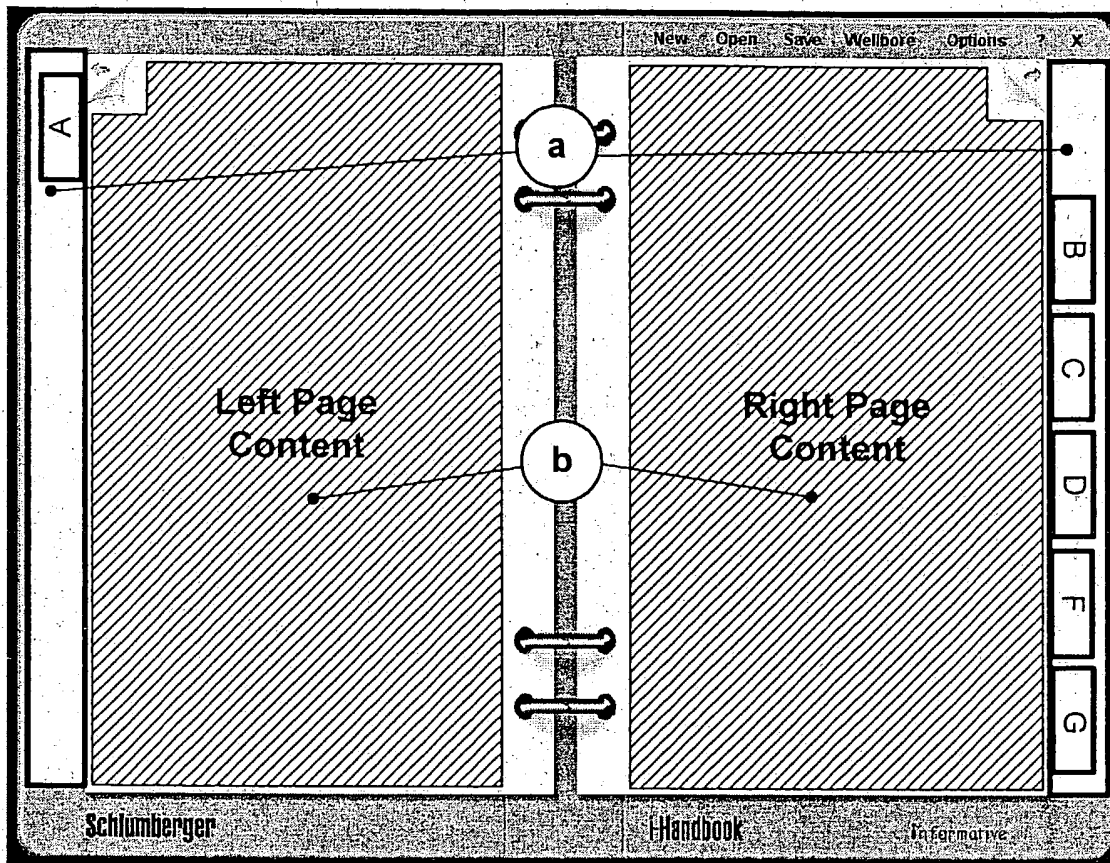


FIG 25 Primary areas of i-Handbook

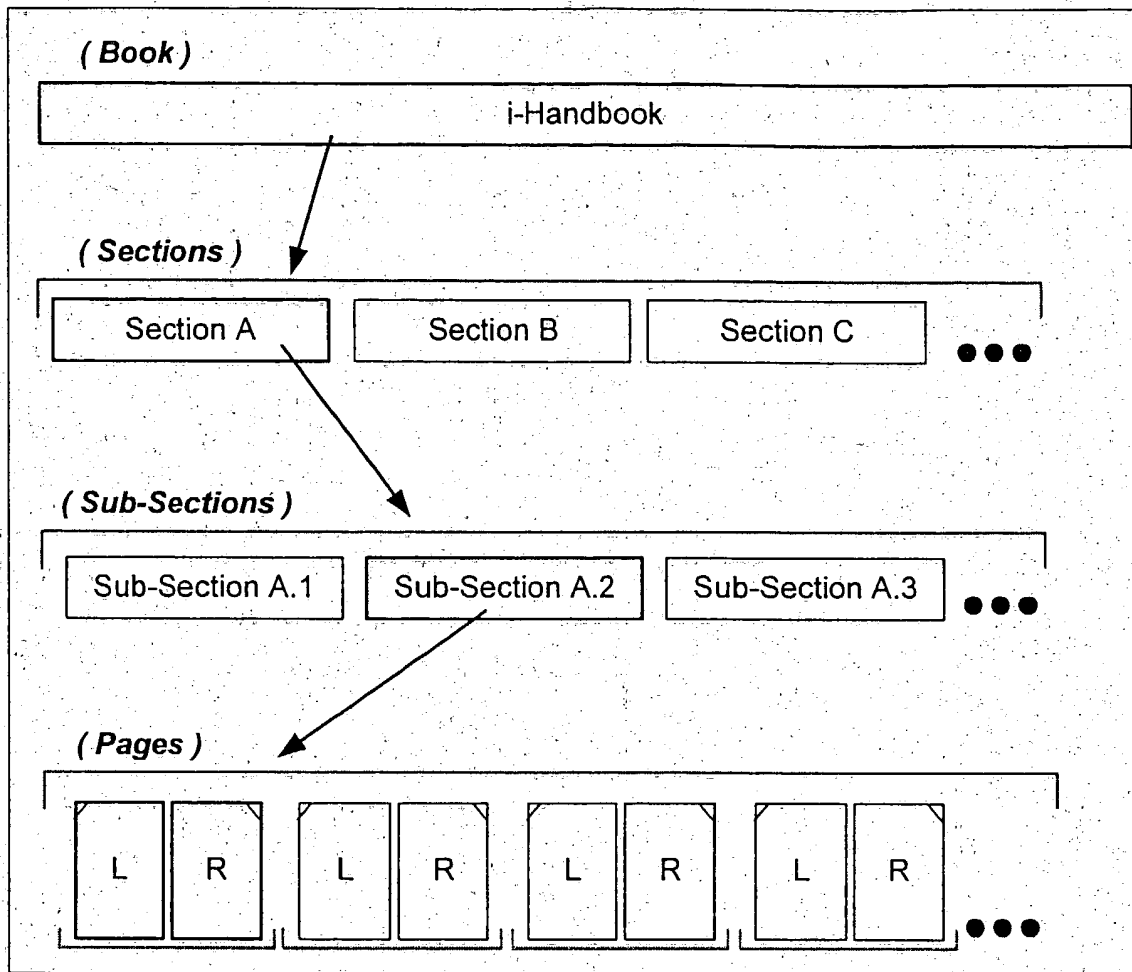


FIG 26 Layers in i-Handbook

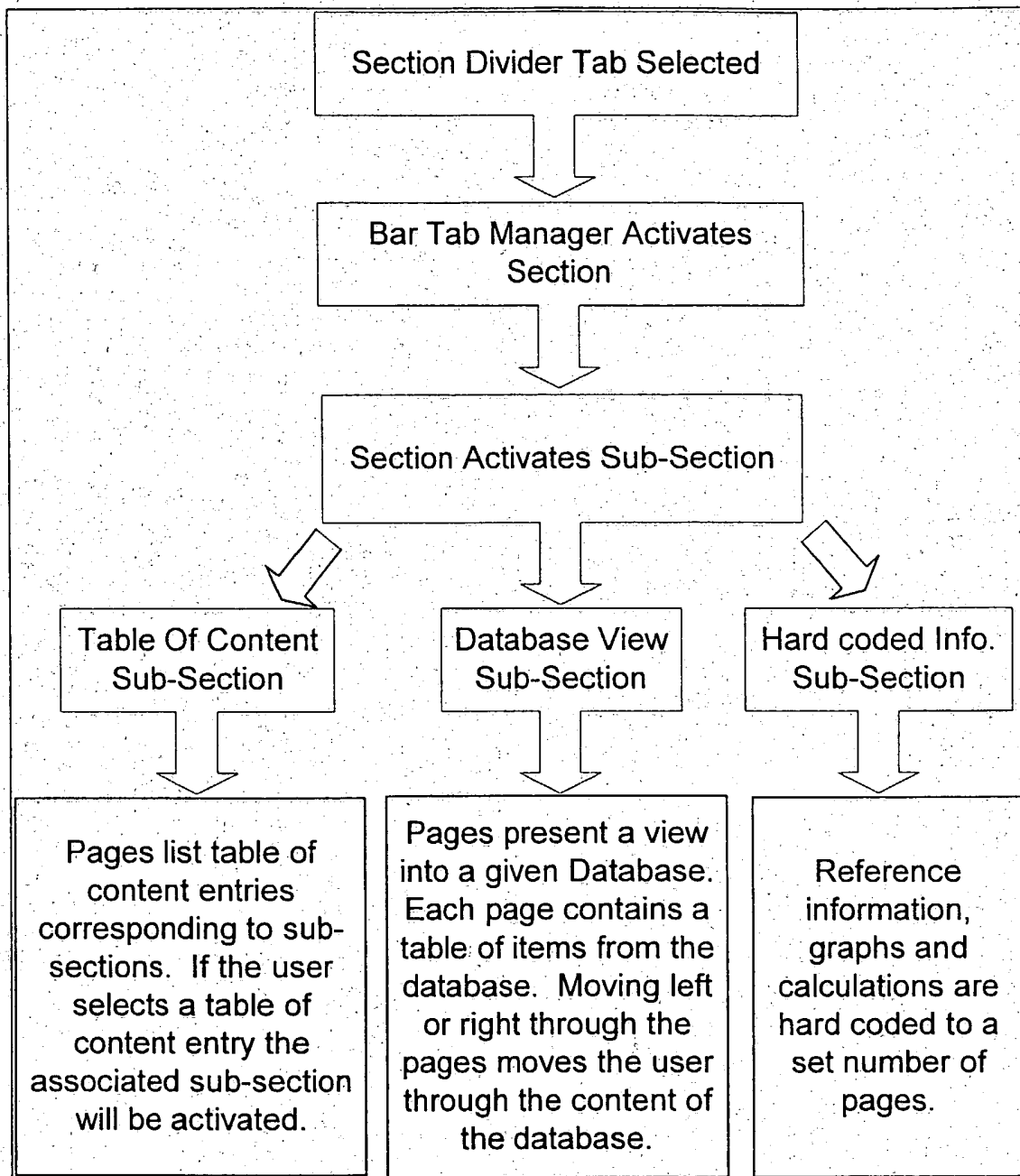


FIG 27 Functional Flow Diagram

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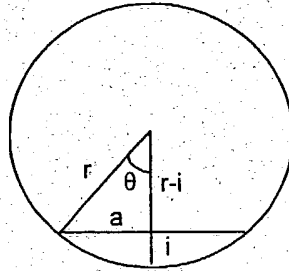


FIG 28

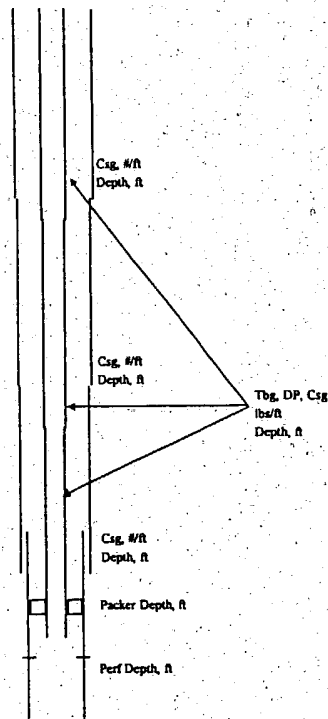


FIG 29